

INTERNATIONAL COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|---|---|---|
| Applicant's or agent's file reference 15383 LgCm | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/GB 00/ 00108 | International filing date (day/month/year) 18/01/2000 | (Earliest) Priority Date (day/month/year) 21/01/1999 |
| Applicant AEA TECHNOLOGY PLC et al. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

contained in the international application in written form.

filed together with the international application in computer readable form.

furnished subsequently to this Authority in written form.

furnished subsequently to this Authority in computer readable form.

the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. **Certain claims were found unsearchable** (See Box I).

3. **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

as suggested by the applicant.

because the applicant failed to suggest a figure.

because this figure better characterizes the invention.

1

None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 00/00108

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A reactor (1) particularly for the plasma treatment of internal combustion engine exhaust gases, in which a power supply (10) and a reactor bed (2) of the dielectric barrier discharge type are connected directly and enclosed in an earthed metal chamber (17) which both isolates the high voltage power supply and acts as a Faraday cage preventing the emission of electromagnetic radiation from the power supply or plasma

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/00108

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 F01N3/08 B01D53/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
 IPC 7 F01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No |
|----------|---|----------------------|
| P, Y | WO 99 05400 A (HALL STEPHEN IVOR ;WEEKS DAVID MICHAEL (GB); INMAN MICHAEL (GB); R) 4 February 1999 (1999-02-04) cited in the application / page 4, line 28 -page 12, line 7; figures --- | 1-16 |
| Y | US 5 284 556 A (RICH STANLEY R) 8 February 1994 (1994-02-08) column 3, line 12 -column 4, line 2; figure 1 --- | 1-16 |
| A | US 5 474 747 A (HAYASHI YUJI ET AL) 12 December 1995 (1995-12-12) column 3, line 46 -column 4, line 49; figures 1-3 --- -/-- | 1 |

 Further documents are listed in the continuation of box C Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance
 "E" earlier document but published on or after the international filing date
 "L" document which may throw doubts on priority, claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
 "X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
 "&" document member of the same patent family

Date of the actual completion of the international search

11 April 2000

Date of mailing of the international search report

19/04/2000

Name and mailing address of the ISA

European Patent Office, P B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.
 Fax: (+31-70) 340-3016

Authorized officer

Torle, E

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/00108

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication where appropriate of the relevant passages | Relevant to claim No |
|----------|--|----------------------|
| A | GB 2 274 412 A (ATOMIC ENERGY AUTHORITY UK) 27 July 1994 (1994-07-27) cited in the application page 6, line 5 -page 8, line 35; figure 3 ----- | 1,4 |
| A | US 3 983 021 A (HENIS JAY M) 28 September 1976 (1976-09-28) column 5, line 17 - line 51; figure ----- | 1 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/00108

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date |
|--|------------------|-------------------------|--|------------------|
| WO 9905400 | A 04-02-1999 | AU 8235798 A | | 16-02-1999 |
| | | GB 2327841 A | | 03-02-1999 |
| US 5284556 | A 08-02-1994 | AU 1875692 A | | 21-12-1992 |
| | | CA 2109517 A | | 02-11-1992 |
| | | EP 0634954 A | | 25-01-1995 |
| | | JP 6509266 T | | 20-10-1994 |
| | | WO 9219361 A | | 12-11-1992 |
| | | US 5433832 A | | 18-07-1995 |
| US 5474747 | A 12-12-1995 | JP 2111722 C | | 21-11-1996 |
| | | JP 6262032 A | | 20-09-1994 |
| | | JP 8022367 B | | 06-03-1996 |
| | | DE 4338995 A | | 01-06-1994 |
| GB 2274412 | A 27-07-1994 | DE 69314928 D | | 04-12-1997 |
| | | DE 69314928 T | | 19-03-1998 |
| | | EP 0608619 A | | 03-08-1994 |
| | | JP 6241019 A | | 30-08-1994 |
| | | NO 940170 A | | 21-07-1994 |
| | | US 5440876 A | | 15-08-1995 |
| US 3983021 | A 28-09-1976 | DE 2227949 A | | 04-01-1973 |
| | | FR 2140584 A | | 19-01-1973 |
| | | IT 956364 B | | 10-10-1973 |

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

| | | | | | | | |
|----|--------------------------|----|---------------------------------------|----|---|----|--------------------------|
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| EE | Estonia | | | | | | |

PATENT COOPERATION TREATY

PCT

RECD 07 MAY 2001

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|--|---|--|
| Applicant's or agent's file reference 15383 LgCm | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/GB00/00108 | International filing date (day/month/year) 18/01/2000 | Priority date (day/month/year) 21/01/1999 |
| International Patent Classification (IPC) or national classification and IPC F01N3/08 | | |
| Applicant AEA TECHNOLOGY PLC et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

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3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

| | |
|---|--|
| Date of submission of the demand 01/07/2000 | Date of completion of this report 03.05.2001 |
| Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized Officer Zebst, M Telephone No. +49 89 2399 7313 |



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/00108

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

| | | |
|----------|---------------------|------------|
| 1,2,4-10 | as originally filed | |
| 3 | with telefax of | 13/09/2000 |

Claims, No.:

| | | |
|------|---------------------|------------|
| 5-16 | as originally filed | |
| 1-4 | with telefax of | 13/09/2000 |

Drawings, sheets:

| | |
|---------|---------------------|
| 1/2,2/2 | as originally filed |
|---------|---------------------|

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/00108

4. The amendments have resulted in the cancellation of:

the description, pages:
 the claims, Nos.:
 the drawings, sheets:

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|------|--------|------|
| Novelty (N) | Yes: | Claims | 1-16 |
| | No: | Claims | |
| Inventive step (IS) | Yes: | Claims | 1-16 |
| | No: | Claims | |
| Industrial applicability (IA) | Yes: | Claims | 1-16 |
| | No: | Claims | |

2. Citations and explanations
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/00108

Re Item V

1. Reference is made to the following document:

D1:GB-A-2274412 (cited in the application)

2. Claim 1

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows all the features of the preamble.

Since none of the cited documents suggest that the known arrangement should be amended as detailed in characterising portion of claim 1, such subject matter can be considered to meet the requirements listed in Article 33 PCT.

The dependent claims also meet these requirements by virtue of their dependency.

Industrial applicability is obviously given.

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

Date of mailing (day/month/year)
24 August 2000 (24.08.00)

To:
Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

International application No.
PCT/GB00/00108

Applicant's or agent's file reference
15383 LgCm

International filing date (day/month/year)
18 January 2000 (18.01.00)

Priority date (day/month/year)
21 January 1999 (21.01.99)

Applicant

HALL, Stephen, Ivor et al

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

01 July 2000 (01.07.00)

in a notice effecting later election filed with the International Bureau on:

2. The election was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Henrik Nyberg

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)Date of mailing (day/month/year)
03 August 2001 (03.08.01)To:
SKELTON, Stephen, Richard
D/IPR
Formalities Section
Poplar 2
MOD Abbey Wood #19
Bristol BS34 8JH
ROYAUME-UNIApplicant's or agent's file reference
IPD/P1222/WOD

IMPORTANT NOTIFICATION

International application No.
PCT/GB00/01108International filing date (day/month/year)
23 March 2000 (23.03.00)

1. The following indications appeared on record concerning:

 the applicant the inventor the agent the common representative

Name and Address

THE SECRETARY OF STATE FOR DEFENCE
Defence Evaluation and Research
Agency
Ively Road
Farnborough
Hampshire GU14 0LX
United KingdomState of Nationality
GB State of Residence
GB
Telephone No.
Facsimile No.
Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

 the person the name the address the nationality the residence

Name and Address

THE SECRETARY OF STATE FOR DEFENCE
DSTL
Porton Down
Salisbury
Wiltshire SP4 0JQ
United KingdomState of Nationality
GB State of Residence
GB
Telephone No.
Facsimile No.
Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

 the receiving Office
 the International Searching Authority
 the International Preliminary Examining Authority the designated Offices concerned
 the elected Offices concerned
 other:The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

Authorized officer

Anman QIU
Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)Date of mailing (day/month/year)
02 August 2001 (02.08.01)Applicant's or agent's file reference
IPD/P1222/WODInternational application No.
PCT/GB00/01108To:
SKELTON, Stephen, Richard
D/IPR
Formalities Section
Poplar 2
MOD Abbey Wood #19
Bristol BS34 8JH
ROYAUME-UNI

IMPORTANT NOTIFICATION

International filing date (day/month/year)
23 March 2000 (23.03.00)1. The following indications appeared on record concerning:
 the applicant the inventor the agent the common representative

Name and Address

BOWDERY, A. O.
D/IPR
Formalities Section
Poplar 2
MOD Abbey Wood #19
Bristol BS34 8JH
United Kingdom

| | |
|----------------------|--------------------|
| State of Nationality | State of Residence |
| Telephone No. | 0117 91 32860 |
| Facsimile No. | 0117 91 32930 |
| Teleprinter No. | |

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:
 the person the name the address the nationality the residence

Name and Address

SKELTON, Stephen, Richard
D/IPR
Formalities Section
Poplar 2
MOD Abbey Wood #19
Bristol BS34 8JH
United Kingdom

| | |
|----------------------|--------------------|
| State of Nationality | State of Residence |
| Telephone No. | 0117 91 32860 |
| Facsimile No. | 0117 91 32930 |
| Teleprinter No. | |

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

 the receiving Office
 the International Searching Authority
 the International Preliminary Examining Authority

 the designated Offices concerned
 the elected Offices concerned
 other:

Authorized officer

Anman QIU

Telephone No.: (41-22) 338-83.38

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

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PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

| |
|---|
| Date of mailing (day/month/year) 03 août 2001 (03.08.01) |
| Applicant's or agent's file reference 15383 LgCm |
| International application No. PCT/GB00/00108 |

To:

LOFTING, Marcus, John
Accentus plc
Patents Dept.
329 Harwell
Didcot
Oxfordshire OX11 0QJ
ROYAUME-UNI

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IMPORTANT NOTIFICATION

International filing date (day/month/year)
18 janvier 2000 (18.01.00)

1. The following indications appeared on record concerning:

the applicant the inventor the agent the common representative

| | | |
|---|----------------------------|--------------------------|
| Name and Address AEA TECHNOLOGY PLC 329 Harwell Didcot Oxfordshire OX11 0RA United Kingdom | State of Nationality GB | State of Residence GB |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

the person the name the address the nationality the residence

| | | |
|---|----------------------------|--------------------------|
| Name and Address ACCENTUS PLC 329 Harwell Didcot Oxfordshire OX11 0QJ United Kingdom | State of Nationality GB | State of Residence GB |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |

3. Further observations, if necessary:

Please note that the agent's address has also been changed accordingly.

4. A copy of this notification has been sent to:

| | |
|--|---|
| <input checked="" type="checkbox"/> the receiving Office | <input type="checkbox"/> the designated Offices concerned |
| <input type="checkbox"/> the International Searching Authority | <input checked="" type="checkbox"/> the elected Offices concerned |
| <input type="checkbox"/> the International Preliminary Examining Authority | <input type="checkbox"/> other: |

| | |
|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer S. Buttay Telephone No.: (41-22) 338.83.38 |
|---|---|

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